

UC Berkeley
Department of History

History 180
Fall 2007

The life sciences
since 1750
J. E. Lesch

Schedule of lectures

8/27 Introduction

I From natural history to biology

8/29 Before natural history

8/31 The systematic spirit: botany

9/3 Holiday

9/5 The systematic spirit: the botanical model in science and medicine

9/7 Popular natural history

II Evolution

9/10 18th-century background; Lamarck and Cuvier

9/12 Geology: catastrophism vs. uniformitarianism

9/14 Darwin's path to the Origin: the voyage of the Beagle

9/17 Darwin's path to the Origin: natural selection

9/19 Evolution in biology and late 19th-century thought

III The organizational transformation of science

9/21 France

9/24 No lecture

9/26 Germany

9/28 Britain

10/1 **Midterm examination I**

10/3 United States

IV Travel, exploration, and discovery

10/5 Cook and the Pacific

10/8 The naturalist's voyage: Humboldt, Wallace

10/10 Exploration of the American West I

10/12 Exploration of the American West II

V The cell

10/15 The microscopic world

10/17 Cell theory: origins

10/19 Cell theory: extension

VI Physiology

- 10/22 Medical origins
- 10/24 Experimentalism
- 10/26 The physical sciences and life
- 10/29 Consolidation

- 10/31 **Midterm examination II**

- 11/2 No lecture
- 11/5 New directions in the early 20th century

VII Genetics

- 11/7 Approaches to heredity 1860-1900
- 11/9 Toward a synthesis
- 11/12 Holiday
- 11/14 The foundation of classical genetics
- 11/16 Molecular genetics: origins
- 11/19 Molecular genetics: DNA
- 11/21 The double helix
- 11/23 Holiday

VIII The biomedical-industrial complex

- 11/26 Science, medicine, and industry: a 20th-century pattern
- 11/28 Origins of chemotherapy: industrial science
- 11/30 Origins of chemotherapy: bacteriology
- 12/3 The sulfa drugs
- 12/5 Penicillin
- 12/7 From the pharmaceutical revolution to biotechnology
- 12/10 Review discussion

12/13 12:30-3:30 Final examination

Organization and assignments

Reading. All of the assigned reading may be found on reserve at the Moffitt Library reserve desk. Much of the reading is in the History 180 Reader, which is produced by Odin Readers and which will be on reserve at the Moffitt reserve desk and is also be available for purchase at Ned's Berkeley Bookstore, 2476 Bancroft Way (across from the campus). The Reader may also be ordered online at www.odinreaders.com. The following books may be purchased:

Peter J. Bowler, Evolution: The History of an Idea . Third edition (California)
Charles Darwin, Autobiography. Nora Barlow, ed. (W. W. Norton)
Thomas S. Kuhn, The Structure of Scientific Revolutions. Second or third
edition (Chicago)
James D. Watson, The Double Helix. Norton Critical Edition, edited by Gunther Stent
(W. W. Norton)

Examinations, papers, and grades. A three-page summary of Thomas S. Kuhn's The Structure of Scientific Revolutions will be due on **Wednesday, September 19**. There will be two midterms, an eight-page paper, and a final examination. The paper replaces the essay part of the final exam. Twenty-five percent of the course grade will be determined by each of the midterms, twenty-five percent by the paper, and twenty-five percent by the final exam. **The paper will be due on Monday, December 3. This course is in exam group 2, so the final examination will be held Thursday, December 13, 12:30-3:30 p.m.**

Finding literature in the history of science, medicine, and technology. If you would like to search for books or articles related to the history of the life sciences, for example, to locate reading for your eight-page paper, you can find a guide to online resources at

http://ohst.berkeley.edu/Teaching/101S_resources.html

This website will show you where you can locate printed and archival primary sources, secondary literature, library resources, and information on the web. If you have not already done so, you should take advantage of tours offered by the library.

Required reading by topic

I From natural history to biology

Thomas S. Kuhn, The Structure of Scientific Revolutions (complete).
Reader, pages TBA (selection by Keith Thomas).

II Evolution

Peter J. Bowler, Evolution, pp. 1-223 [Note: the page numbers given for this book refer to the third edition. Appropriate page numbers for the second edition are 1-245].

Charles Darwin, Autobiography, pp. 11-145.

Richard D. Keynes, The Beagle Record, pp. 22-24, 27, 31-32, 36-40, 68-70, 138-142, 248-250, and look at the pictures (Moffitt reserve).

Alan Moorehead, Darwin and the Beagle. Look at the pictures (Moffitt reserve).

Reader, pages TBA (selections by Jean-Baptiste Lamarck, Georges Cuvier, Charles Lyell).

III The organizational transformation of science

John Theodore Merz, A History of European Scientific Thought in the Nineteenth Century, Volume 1, pp. 89-301 (Moffitt reserve).

William Coleman, Biology in the Nineteenth Century, pp. 1-8 (Moffitt reserve).
Reader, pages TBA (selections by W. V. Farrar, Joseph Ben-David).

IV Travel, exploration, and discovery

A. Grenfell Price, ed., The Explorations of Captain James Cook in the Pacific, pp. v-xvii, 1-21, 63-85 (Moffitt reserve).

Reader, pages TBA (selections by David Mackay, Alfred Russel Wallace, William Goetzmann).

V The cell

William Coleman, Biology in the Nineteenth Century, pp. 16-34 (Moffitt reserve).

Reader, pages TBA (selections by François Jacob, Theodor Schwann, Rudolf Virchow, Edmund B. Wilson).

VI Physiology

William Coleman, Biology in the Nineteenth Century, pp. 118-159 (Moffitt reserve).

John E. Lesch, Science and Medicine in France: The Emergence of Experimental Physiology 1790-1855, pp. 12-30, 99-124 (Moffitt reserve).

Garland Allen, Life Science in the Twentieth Century, pp. 73-111 (Moffitt reserve).

Reader, pages TBA (selections by Claude Bernard, Walter Cannon).

VII Genetics

Peter J. Bowler, Evolution, pp. 224-273, 325-381 [Note: the page numbers given for this book refer to the third edition. Appropriate page numbers for the second edition are 246-281, 291-296, 307-332].

Garland Allen, Life Science in the Twentieth Century, pp. 1-19, 41-72, 126-145, 187-228 (Moffitt reserve).

James D. Watson, The Double Helix, Norton Critical Edition (complete)

Reader, pages TBA (selection by Diane B. Paul and Barbara A. Kimmelman).

And one of the following:

Donald Fleming, "Emigré physicists and the biological revolution," in Donald Fleming and Bernard Bailyn, eds., The Intellectual Migration: Europe and America 1930-1960, pp. 152-189 (Moffitt reserve).

or

François Jacob, The Logic of Life, Chapter 5, "The molecule" (Moffitt reserve).

or

Erwin Schrödinger, What is Life?, Chapters 4-7 and Epilogue (Moffitt reserve).

VIII The biomedical-industrial complex

Harry F. Dowling, Fighting Infection: Conquests of the Twentieth Century, pp. 105-157 (Moffitt reserve).

Reader, pages TBA (selections by Hubert A. Lechevalier and Morris Solotorovsky, Alfred Gilman, Ernst B. Chain, Kendall Birr, James Harvey Young).

